DETAILED RESPONSE TO OFFICE ACTION

We are very grateful to the examiner for the constructive comments/instructions with regard to the original application. We have addressed all comments of the examiner in the amended application, and amended the application according to the examiner's instructions. We believe all the format issues identified by the examiner have been addressed in this amendment. Amended or rewritten portions have been printed in *italic* in the marked-up version of the amended application. Below we detail how we have amended the application.

Re: Information Disclosure Statement

1. A legible copy of all U.S. patents and publications that are listed in the information disclosure statement (reattached) has been enclosed with this filling of the amendment. Six additional U.S. patents have been cited in the Background of the Invention section, and added to the information disclosure statement.

Re: Specification

2. Following corrections have been made in the amendment to provide proper antecedent basis for the claimed subject matter.

2.1 To provide proper antecedent basis for the claimed subject matter on "electrical activities originating in the brain" (claim 5), the following paragraphs have been added to the "Summary of the Invention" Section, and the "Detailed Description of the Invention" Section:

"One aspect of the invention further relates to methods wherein scalp electroencephalographic signals are measured using electrodes, and the electrode positions are determined, and the head-brain geometry information is determined from magnetic resonance imaging or computer tomography imaging, and brain activation

sequence is estimated from scalp potentials and the head-brain geometry information, using brain source models in which cell action potentials, excitation rules and inhomogeneity properties of the brain are considered, and estimated brain activation sequence are displayed over the three dimension brain, with or without displaying of other imaging results including magnetic resonance imaging and computer tomography."

"In accordance with another preferred embodiment, the invention uses a brain-source-model in which physiological or pathological *a priori* information is embedded to represent brain electrical activity. Such physiological brain-source-model may be cellular automaton model, or rule-based propagation brain model, or other brain models in which differential equations are solved to determine cellular action potentials. Inhomogeneity properties of the brain may be included into such brain source models. A preliminary diagnosis system is used to determine brain status based on *a priori* knowledge and the measured biosignals. The output of the preliminary diagnosis system provides the initial brain model parameters used in the optimization system. Then the BSPMs are simulated using the computer brain model, and then the objective functions that assess the similarity between the measured and simulated BSPMs are calculated. If the measured BSPM and the simulated BSPM matches well, the activation sequence produced by the brain model is regarded as the reconstructed activation sequence in the brain. Similarly brain model parameters corresponding with the brain activation or abnormalities are also used as characteristics guiding clinical diagnosis and intervention. If the measured BSPM and the simulated BSPM do not match well, the brain model parameters are adjusted with the aid of the optimization algorithms and the simulation procedure proceeds until the objective functions satisfy the given convergent criteria."

Furthermore, in the "Background of the Invention" Section, the following paragraph has been added: